

THE ROLE OF INFORMATION TECHNOLOGY IN HUMAN RESOURCE MANAGEMENT: EMPIRICAL EVIDENCE FROM PUBLIC SECTOR OF PAKISTAN

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ABSTRACT

Purpose: At present times, information technology is commonly exploited in different areas of HRM, therefore, most of the public sector organizations have taken initiated to utilize the outstanding services of IT in their HR management functions to optimize and improve their HR departmental efficiency. Information technology has radically changed the way organizations are operated, particularly the HR department.

Design/methodology/approach: The current study has been done to identify the key role played by information technology in all human resource departments of public sector organizations operating in Pakistan, and it was found that information technology has changed the operations and functions of the HR department.

Findings: The current study has been done to identify the key role played by information technology in all human resource departments of public sector organizations operating in Pakistan, and it was found that information technology has changed the operations and functions of the HR department.

Research limitations/implications: The survey questionnaire was adopted; overall 300 questionnaires were distributed, from which 235 returns with a 78% response rate.

Practical implications: A simple regression analysis was carried out to check the role of IT in the human resource department of Pakistani public sector organizations, hence found a positive role of IT with $r^2 = .070$.

Paper type: Research paper.

Keyword: Information Technology, Human Resource Department, Public Sector, Regression Analysis.

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I. INTRODUCTION

Human capital is the valuable asset of organizations, thus to face modern challenges, technological advancements, gaining competitive advantage, and innovative business trends in global markets, effective and efficient personnel management is needed. The goal of organizations includes survival, expansion and growth, productivity, profitability, excellence, and innovation, whereas an individual goal encompasses job security, pay and perquisites, job satisfaction, recognition, appreciation, and challenging work, therefore, integration of both employees and employers interest is essential (Carroll & Wagar, 2010). HRM is the fundamental sub-system of

organizations, thus playing a central role in the developmental process of contemporary economies (Carroll & Wagar, 2010)

Excellent human resource management activities assist in attracting, selecting, and retaining best employees throughout the journey of organizational survival, thus providing them with an attractive and healthy work environment for the effective exploitation of their competencies and capabilities (Beadles, Lowery, & Johns, 2015). As, the present business environment is exclusively dependent on innovation and technological advancements, hence the use of information technology has become a vital part of the business world. At present, almost every HR departmental functions and activities are being done through electronic media, thus making things more economical, faster, and time- saving. The use of technology in the human resource department encompasses the recruitment process, employee training, and developmental activities, data storage and retrieval, compensation procedure, performance appraisal system, benefits administrations, working times, and HR management information system (Panayotopoulou, Galanaki, & Papalexandris, 2010).

The human resource operations consist of tracking labor data which conventionally been contains personal records, activities, abilities, skills, and salary, therefore to lessen the physical workload related to these managerial activities, corporations instigate to computerize numerous practices by introducing specialized HR management systems (Suman Kathuria, 2014). The organizational administration needs to secure and make confidential all the business and employee information so that it cannot be misused by other competitive authorities, due to this reason HR information system software is an intelligent choice to reduce the paperwork as well as helps in streamlining the processes and data organization (Suman Kathuria, 2014).

The present study has been conducted to identify the fundamental role played by information technology in human resource departments of public sector organizations in Pakistan. The respondents were the employees and managers of human resource departments, employing information technology in their daily work assignments. Overall 300 survey questionnaires were distributed, from which 235 return back with a 78% response rate. A simple regression technique was exploited, hence found a significant role of information technology in HRM of public sector organizations operating in Pakistan.

Human resource management practices and techniques that have been developed in commercial settings are now extensively adopted by various public sector organizations, consequently, public sector firms are now being judged based on their human resource performances (Beadles et al., 2015). Although, for the effective personnel management system, corporations must have sound HRM practices, which are indispensable for managing human capital, whilst ensuring that human resources are utilized to the achievement of firm goals.

Corporate HR management operations have gained escalating strategic importance as effective HR management is imperative which enable organizations to convene the marketplace demands with highly competent and well-qualified workers at all times. Empirical studies concluded that HR management systems can simultaneously meet the challenges of becoming more flexible, strategic, customer-oriented, and cost-efficient by leveraging technology, whereas most of the researchers predict that personal computer will have to be the fundamental tool for almost all human resource professionals in both public and private sector organizations (Hempel, 2004). Consequently, virtual human resource is emerging because of the rising sophistication of information technology and enlarged outside structural options (Kovach & Cathcart, 1999).

According to past research on “Analysis of Factors Affecting Adoption of Mobile Banking Application in Indonesia: an Application of The Unified Theory of Acceptance and Use of Technology (UTAUT)”. The result combined credibilities and perceived self-efficiency by the behavioral intention (Mufingatun, Prijanto, & Dutt, 2020). The implication based on research shown how technology giving the impact on human perception.

Implemented on technology advantages according to past research “Faktor Kreativitas Dalam Pengembangan Model Inkubator Bisnis Di Era Digital”. The research tells about digitalization on information technology for business incubation (Pudianti, Herawati, & Purwaningsih, 2018). The urgency about utilized technology advantage based on new model perspective, especially on business model (Pudianti et al., 2018). In this research could be the collective concept how human resource department make an impact from technology information.

Collect to past research related by human resource management. The research with title “Difference between financial intelligence on millennials, Gen X, and baby boomers” discussing about diversification on technology information by per generation. Three categories in differences advantage of technology give the reaction on digital improvement by human resource management (Anastasia, Setiadiwiria, & Kunto, 2019). The reaction needs to adaptive model and the duration for new logical thinking (Anastasia et al., 2019). The technology information could make a bias adaptive and need a little longer for technology adaptation. Recited to this research for the next step on human resource department.

All of these references and compared to this research, there is compatible urgencies on technology information. Collected and making advantages to the concept of Human Resource Management. It will be based integrated in Human Resource Information Technology.

The advancements in the field of information technology have led to meet the contemporary challenges of HR management, for instance attracting, selecting, retaining, and encouraging employees as well as managing the human component of the technological revolution in the future (Bergenhengouwen, Ten Horn, & Mooijman, 1997). One of the prevalent advantages of using information technology in HR management is that it assists the HR employees in freeing from intermediary functions, hence permitting them to completely concentrate on strategic HR planning and development (Pinsonneault & Kraemer, 1993). Moreover, IT has also smoothened the way to automate other day work activities such as benefits administration, transactional activities, and payroll processing, so that HR experts have fully devoted their attention to other strategic affairs such as enhanced productivity and improved employee performance (Caudron, 2003).

In the current scenario of extreme globalization, employing corporations and their work climate has become progressively more complex, therefore managers have to face increasing difficulties to control human force, which comes from different cultures, countries, and political setups (Caudron, 2003). Considerable benefits of information technology and communication can impeccably transfer to human resource applications, and the professionals following the same path have introduced the HR information system (HRIS) (Mei, Lee, & Al-Hawamdeh, 2004). Human resource information system is an organized process for gathering, accumulating, upholding, validating, and retrieving data, needed by a firm for its human capital, employee activities, and organizational strategic planning (Beaumont, Kinnie, Arthurs, & Weatherall, 1992).

HRIS also supports the long-standing planning with statistics for workforce planning along with demand and supply forecasts, recruitment on equal employment basis, divisions and candidate qualifications, training and development program costs, and learner work performance. Moreover, HRIS to support the salary forecasts, compensation programs, employee and management relationships, pay budgets with data on indenture negotiations, and labor assistance needs (Mishra & Akman, 2010). Surveys conducted by prior researchers concluded that approximately more than 90% of human resource departments are operating under several forms of the computerized human resource management system (Beaumont et al., 1992).

A. Role of IT in Different Areas of Human Resource Management

HR information system is an integrated approach of obtaining and storing information used to make decisions and analysis in human resource field (Hendrickson, 2003). Functionally the HR information system is an online solution for data entry, data information requirements, and data tracking of employees, payroll, and accounting and management operations in a business (Mukherjee, Bhattacharyya, & Bera, 2014). IT has contributed a lot to diverse areas of HRM, including.

B. Recruitment

One approach through which HR functions have been drastically impacted by information technology is employee recruitment. Before the inception of internet, human resource recruiters relied on print media like newspapers, to post different job ads for different positions, but print media does not have the potential to post job ads at once on diverse locations and have thousands of people notice it in a flash (Mukherjee et al., 2014). E-recruitment is an approach that uses the internet to magnetize potential candidates to the firm, which can utilize the firm's corporate website along with commercial job-boards (Parry, 2006). E-recruitment comprises activities such as posting job ads on websites to attract and stimulate candidates, allows applicants to apply online, and simultaneously stores the applicant's records on the electronic database that let HR managers search, screen, and filter applicant's job applications. The technology based ATS shortlists the potential applicants and organizes for interviews and other recruitment allied activities (Sharma et al., 2012).

C. Training and Development

IT based training and developmental program tracks workers' profiles and schedule training events. Moreover, it manages the classifications of training, authorities, responsibilities, and certification requirements for every employee in a user friendly environment (Shajera). The organizational learning management system, allow let HR department to track experiences, education, capabilities, and skills of employees along with outlining different sort of training courses, CDs, books, web-based learning necessary of up gradation of task related skills (Ashbaugh & Miranda, 2002).

D. Benefits and Administration

The administration of benefits entails the management and creation of labor benefits by providing strong grounds for understanding how employees can qualify for these benefits. The purpose of the IT based benefits administration program is to track and administer the participation of employees in different benefits programs (Hustad & Munkvold, 2005). Typically this program encompasses insurance, profit sharing, compensation, and retirement (Ankrah, Sokro, Sokro, & Sokro, 2012).

E. Payroll

Organizational payroll sheet comprises all the monetary records of wages, salaries, perquisites, deductions offered to its employees, in other words, it is the number of financial benefits paid to workers against their services (Hustad & Munkvold, 2005). The payroll administrative body has the fundamental assignment to computerize the organizational compensation process, therefore the payroll MS has been used to produce pay-slips by taking into consideration all the financial aspects of payroll sheet (Rohilla, 2017). Besides, it offers several benefits including security management, custom based payroll processes, pay-slips generation, employee's work completion reports, and managing a vast array of employee compensation records (Carroll & Wagar, 2010).

F. Self Service Approach

The human resource department has also launched the employee self service approach which let them query HR allied information and execute some human resource transactions over and above the system. Labor can also locate their attendance records from the system without inquiring the required statistics from human resource personnel (Carroll & Wagar, 2010). This IT based system also allows supervisors to approve overtime requests received from subordinates with no overloading the work on human resource department. Some firms have gone away from the conventional functions, hence developed HR information systems, which support selection, employing, job placement, performance management, benefits analysis, health, security, and safety, whereas others assimilate an outsourced ATS (Mukherjee et al., 2014).

G. Performance Appraisal

IT based performance management system helps HR managers to evaluate and compare the work performance of its employees against a predetermined set of objectives (Mukherjee et al., 2014). Some performance appraisal applications are meant for compensation based appraisal, performance improvement, termination, promotion, and test validation. There is a general agreement of opinion that performance appraisal system leads to positive organizational results, therefore this IT based module has also been incorporated in the contemporary human resource management system (Tohidi, 2011).

From literature the null and alternative hypothesis became,

H0: Information technology does not play a significant role in human resource management activities.

H1: Information technology plays a significant role in human resource management activities.

II. METHODS

The present study was systematic and exploratory, investigating the role of information technology in corporate human resource departments operating in public sector of Pakistan. A survey instrument was adopted for this research, and all the information was collected through a questionnaire prepared in Turkish. The survey questionnaire contains six questions measuring the role and impact of information technology in human resource operations. The instrument was structured and does not include open-ended questions. All the respondents were asked to rate each question against a predetermined set of options, question no. 2 and 3 were yes/no type questions, while from questions 3 to 6 different alternative options were given. The respondents were the managers and employees of the human resource department. Overall 300 questionnaires were distributed, out of which 235 returns back, with a 78% response rate. The sample of respondents was selected through non-probability sampling and those organizational HR departments were visited who were conveniently available. Inconvenience sampling technique, the data is gathered from elements of the population, conveniently accessible to provide it. The applicant's demographics have been given in table I, by showing their age, work experience, and gender statistics.

A. Descriptive Statistics of Demographics

Table 1: Descriptive Statistics of Demographics

		Mean	Std. Deviation
1	Age	2.18	.712
2	Work Experience	2.19	.888
3	Gender	2.16	.352

The age's descriptive statistics are showing the mean value of 2.18 along with the std. deviation of 0.712, which means that the data values are .712 are far away from their mean, similarly, the DS of work-experience is showing the mean value of 2.19 and the std. variation of 0.888, meaning that the values are .888 are away from the mean. On the other hand, the DS of gender explaining the mean value of 2.16 and the std. deviation of 0.352, that is, the data values are .352 is far away from mean values.

III. RESULT AND DISCUSSION

In this study role of information technology has been taken as the independent variable, while HR departmental functions as the dependent variable in public sector organizations of Pakistan. To check the role performed by IT in HRM, a simple regression analysis technique was adopted, and it was found that in Pakistani public sector organizations, information technology has a strong and positive role in the performance of HR operations with adjusted r^2 value of 70% given in table II. Consistent with Heiman (1998) proportional variations beyond 25% are regarded as significant. The r^2 demonstrates that 70% of the deviations are occurring in human resource management because of information technology. The ANOVA table III, demonstrating the significant p values of 0.001, on the other hand, the value of t (4.720) given in table IV means that there exists a strong bonding between information technology and human resource management of the public sector organizations. Similarly, the value of the unstandardized coefficient is 0.224 stating that if information technology is zero, then the human resource department value will increase by 3.325, in contrast, if information technology increases by 1 unit, then HRM is expected to boost up by 0.224, hence stating that information technology has a significant role in day to day operations of human resource management, thus null hypothesis has been rejected while accepting the alternative hypothesis.

The resultant regression equation has been taken from Table IV.

Human Resource Management = 3.325+ 0.224*Information Technology

This regression equation is showing that the unstandardized coefficient for information technology is 0.224, thus indicating that for every supplementary change in the use of IT; it is projected human resource management to augment through an average of 0.224.

Table 2: Regression model summary – Information Technology

Model	r	r^2	Adjusted	Std. Error of the Estimate
1	.301 ^a	.075	.070	.51469

a. Predictors: (Constant), Information Technology

Table 3: Results of ANOVA– Information Technology

Model	Sum of squares	df	Mean square	F	Sig.
Regression	6.205	1	6.205	22.328	.001 ^b
Residual	61.714	232	.264		
Total	67.581	233			

b. Dependent Variable: Human Resource Management

Table 4: Regression coefficients^a – Information Technology

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
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	B	SE	β		
(Constant)	3.325	.165		18.972	.001
IT	.224	.045	.301	4.720	.001

Information technology has the potential to bring plentiful improvements to corporation's HR departments, together with lowering administrative expenses, increased productivity, and lower response time, improved decision making capability and enhanced customer services (Mukherjee et al., 2014). The effective and efficient management of IT role in HR departmental functions simultaneously improve the success factor and performance of organizations (Lau, T., Wong, Y., Chan, K., & Law, 2001).

Corporations are becoming progressively dependent on information technology in the performance of their Human resource functions (Ball, 2001). The information technology use has been expended enormously and is enduring to revolutionize human resource management activities by managers, executives, and employees simultaneously (Davison, Maraist, & Bing, 2011);(Lapiņa, Maurāne, & Stariņeca, 2014). The interaction of IT and HRM came in the form of a human resource information system and has grown-up since the 1960s (Lederer, 1984)

A survey report conducted by (Ball, 2001) demonstrated that approximately sixty percent of affluence organizations in the late '90s exploit the HR information system to carry out regular HR management operations. Information technology and human resource information system are now employed not only in administrative activities but also in business and strategic decision making functions (Kovach & Cathcart, 1999);

IV. CONCLUSION

Information technology was hypothesized to play a significant role in the performance of human resource management operations. Above all, the current research has highlighted the significance of information technology in HRM, therefore supporting the alternative hypothesis (Mishra & Akman, 2010). Further, the study has examined the ways by which HR departments of public sector organizations are exploiting an IT-based human resource system to perform its various operations in an efficient manner (Mishra & Akman, 2010). HR information system is a combination of processes and systems at the interface of HRM and IT (SUMAN KATHURIA, 2014). At present, computer applications and programs are merely considered as a form of management, which when utilizing properly, facilitates corporations to upgrade the quality of services and products it offers to the markets (Ashbaugh & Miranda, 2002). Generally, the HR departmental functions are administrative and are common to all types of organizations; hence IT is the best solution to cope with all the contemporary challenges of human resource operations (Carroll & Wagar, 2010). The use of IT in HR operations offers an extensive amount of benefits such as a paperless environment, data security, cost-effectiveness, enhanced storage efficiency, and time-saving (Panayotopoulou et al., 2010).

Similarly, the use of information technology and HR information system is regarded as the most significant and imperative factors that positively influence the activities and functions of the HR department (Obeidat, 2012). Communication and information technology, an important expression for technologies pooled with the social media, internet, computers, mobile communication, allows the corporations to modernize their inside processes, core competencies, structures, and relevant potential markets on an international level. Communication and information technologies are operating through each part of the country thus have allegations for approximately every enterprise (Rohilla, 2017).

With the progression of technology and the evolvement of electronic-human resources, corporations have turned out to be more competitive by improving performance, profitability, quality, and reducing costs in different areas of human resource management (Tiwari, Chimanbhai, & Saxena, 2012). Modern industries and businesses are captivating appropriate steps for the execution of information technology in major areas of management of HR by facilitating the human capital to optimally contribute to gaining organizational competitive advantage (Mishra & Akman, 2010).

It is apparent from the above discussion that technologies provide immense benefits to the internal operations and processes of organizations to a great extent, as IT is a combination of hardware and software for employees and organizations thus plays a significant and momentous role in HR management. The employment of computers, telephones, internet, printers, robots, and fax machines, etc. assist in the exchange and transformation of information and data very quickly in and outside of the organizations. By way of IT, human resource management plans can be made more promptly, hence job performances become effective (Rohilla, 2017).

This research was exploratory, offering ground for future research work in the same area. A detailed and in-depth study can be done with the contribution of human resource departmental heads, human resource executives, senior HR executives, vendors, and IT executives. Besides the study has highlighted the role of IT in human resource management as a whole, future empirical researches should scrutinize the in-depth role and impact of information technology in different areas of HRM separately, in different sectors to construct a comprehensive evaluation. Moreover, in Pakistan, the same study can also be performed with more depth and breadth of IT tools and human resource management functions.

Future research could also be conducted by choosing a sample from the same public sector industry such as educational sector, meanwhile, the sample for this study was chosen using non-probability sampling, and those candidates were studied who were conveniently available, hence for more authentic future research work random sampling can be applied with increased sample size as well. Moreover, to enlarge the generalizability of the results over other areas of the same continent, human resource management of the public service sector and public manufacturing sector should be studied thoroughly and separately.

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